

Remarks

Claims 1-12 and 14 are pending herein. Claims 4 and 10 are withdrawn from further consideration as being drawn to non-elected inventions, and claims 6, 11 and 14 are withdrawn from further consideration as being drawn to a non-elected species.

By this Amendment, Applicants amend claims 1 and 9 and add new claim 15.

Claim 1 is amended in part to recite specific concentration levels for the thermoplastic component and the impact modifier. The concentrations were already recited in claim 1 in paragraph (iv). The claim has been further amended to delete paragraph (iii) and to delete redundant language in paragraph (iv). Applicants respectfully submit that the amendment to claim 1 does not raise new issues because the concentration levels were already recited in the claim.

Claim 9 is amended to depend upon new claim 15 rather than claim 1.

New claim 15 is an independent claim similar to claim 1 except that the new claim limits the list of materials which can be used in the core. Applicants submit that new claim 15 does not raise new issues because the core materials recited therein are within the broader range of core materials recited in claim 1.

Applicants respectfully request entry of this Amendment.

In the Office Action, claims 1-3, 5, 7-9 and 12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Japanese 62-285947 ("JP '947") for reasons of record. In addition, claims 1-3, 5, 7-9 and 12 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

In view of the amendments and remarks herein, reconsideration and withdrawal of the rejections are respectfully requested.

I. Rejection Under 35 U.S.C. §103(a)

Applicants respectfully submit that claims 1-3, 5, 7, 8 and 12 would not have been obvious over JP '947. As noted above, claim 9 has been amended to depend upon new claim 15, the patentability of which is discussed in section II herein.

By this Amendment, claim 1 has been amended to recite a concentration of from 82 to 98% by weight for the thermoplastic component, a concentration of from 2 to 18% by weight for the impact modifier, and a (B2)/(A) ratio range of from 40/60-25/75.

Applicants respectfully submit that JP '947 does not teach or suggest, in either its broad teachings or in the Examples set forth in Tables I and II therein, the specific combination of a thermoplastic component concentration of from 82 to 98% by weight, an impact modifier concentration of from 2 to 18% by weight, and a (B2)/(A) ratio of from 40/60 to 25/75.

JP '947 teaches that the polyester composition therein contains (A) 100 parts by weight of aromatic polyester, (B) 1-80 parts by weight of epoxy group-containing copolymer from epoxy group-containing unsaturated monomer and epoxy group-free unsaturated monomer, and (C) 1-80 parts by weight of rubbery graft polymer (see, e.g., the claim and page 3, last paragraph). The preferred amount of the epoxy group-containing copolymer is 2-50 parts by weight, and the more preferred amount is 3-30 parts by weight (see, e.g., page 7, second full paragraph). The preferred amount of the rubbery graft

polymer is 2-50 parts by weight, and the more preferred amount is 3-30 parts by weight (see, e.g., page 9, last two lines). Thus, in its broadest embodiment, the polyester composition disclosed in JP '947 contains from 38 to 98% by weight of the polyester and from 0.2 to 62% by weight of the impact modifier and has a (B)/(C) ratio of 1:80 to 80:1. In its preferred embodiment, the polyester composition contains from 50 to 96% by weight of the polyester and from 4 to 50% by weight of the impact modifier and has a (B)/(C) ratio of 2:50 to 50:2. In its more preferred embodiment, the composition contains from 62.5 to 94% by weight of the polyester and from 6 to 37.5% by weight of the impact modifier and has a (B)/(C) ratio of 3:30 to 30:3.

In the Invention Examples and Comparative Examples set forth in Applicants' specification (see pages 14-15), the compositions contained 80% by weight of polybutadiene terephthalate (PBT) and 20% by weight of impact modifier and had (B)/(A) ratios that varied as shown in Tables 1 and 2 on page 16. Although the PBT and impact modifier concentration levels and (B)/(A) ratios used in the Invention Examples set forth in Tables 1 and 2 are each within the broad, preferred and more preferred ranges set forth in the specification of JP '947, the PBT and impact modifier concentration levels and (B)/(A) ratio used in the Comparative Examples are also within the scope of ranges disclosed in JP '947. As can be seen in Tables 1-3, Applicants' Examples and Comparative Examples show that the particular (B)/(A) ratio used has a significant effect on Notched Charpy impact strength at -40°C and +23°C and on the melt flow index (MFI) of the composition (see Table 3, pages 15-16). Thus, Applicants' Examples and Comparative Examples

show unexpected results relative to particular (B)/(A) ratios within the scope of amended claim 1.

Although the broadest embodiment of the JP '947 composition has concentration levels of PBT and impact modifier and a (B)/(A) ratio range that covers the PBT and impact modifier concentrations and (B)/(A) ratios used in both Applicants' Invention Examples and Comparative Invention Examples, none of the specific Examples set forth in JP '947 use the specific combination of polyester and impact modifier concentration levels and (B)/(A) ratio set forth in amended claim 1.

The composition used in JP '947's Example 1 (see Table I on page 16) contains 100 parts by weight of PBT, 10 parts by weight of an epoxy group-containing copolymer, and 5 parts by weight of a rubbery graft copolymer. Thus, the Example 1 composition contains 87% by weight of PBT, 13% by weight of impact modifier and a (B)/(A) ratio of 2:1. Therefore, the (B)/(A) ratio used in Example 1 is outside the scope of the (B)/(A) ratio range set forth in amended claim 1.

The composition used in JP '947's Example 2 contains 100 parts by weight of PBT, 30 parts by weight of glass fibers, 10 parts by weight of an epoxy group-containing copolymer, and 5 parts by weight of a rubbery graft copolymer. Thus, the Example 2 composition contains 69% by weight of PBT, 10.3% by weight of impact modifier and a (B)/(A) ratio of 2:1. Therefore, the PBT concentration level and the (B)/(A) ratio used in Example 1 are outside the scope of the polyester concentration level range and (B)/(A) ratio range set forth in amended claim 1.

The composition used in JP '947's Example 3 contains 100 parts by weight of PBT, 10 parts by weight of an epoxy group-containing copolymer, and 10 parts by weight of a rubbery graft copolymer. Thus, the Example 3 composition contains 83.3% by weight of PBT, 16.7% by weight of impact modifier and a (B)/(A) ratio of 1:1. Therefore, the (B)/(A) ratio used in Example 3 is outside the scope of the (B)/(A) ratio range set forth in amended claim 1.

The composition used in JP '947's Example 4 contains 100 parts by weight of PBT, 30 parts by weight of glass fibers, 10 parts by weight of an epoxy group-containing copolymer, and 10 parts by weight of a rubbery graft copolymer. Thus, the Example 4 composition contains 66.7% by weight of PBT, 13.3% by weight of impact modifier and a (B)/(A) ratio of 1:1. Therefore, the PBT concentration level and the (B)/(A) ratio used in Example 4 are outside the scope of the polyester concentration level range and (B)/(A) ratio range set forth in amended claim 1.

The composition used in JP '947's Example 5 contains 100 parts by weight of PBT, 3 parts by weight of an epoxy group-containing copolymer, and 20 parts by weight of a rubbery graft copolymer. Thus, the Example 5 composition contains 81.3% by weight of PBT, 18.7% by weight of impact modifier and a (B)/(A) ratio of 3:20. Therefore, the PBT concentration level and the (B)/(A) ratio used in Example 5 are outside the scope of the polyester concentration level range and (B)/(A) ratio range set forth in amended claim 1.

The composition used in JP '947's Example 6 contains 100 parts by weight of PBT, 30 parts by weight of glass fibers, 5 parts by weight of an epoxy group-containing copolymer, and 20 parts by weight of a rubbery graft copolymer. Thus, the Example 6

composition contains 64.5% by weight of PBT, 16.1% by weight of impact modifier and a (B)/(A) ratio of 1:4. Therefore, the PBT concentration level and the (B)/(A) ratio used in Example 6 are outside the scope of the polyester concentration level range and (B)/(A) ratio range set forth in amended claim 1.

The composition used in JP '947's Example 7 contains 100 parts by weight of PBT, 30 parts by weight of glass fibers, 3 parts by weight of an epoxy group-containing copolymer, and 20 parts by weight of a rubbery graft copolymer. Thus, the Example 7 composition contains 65.4% by weight of PBT, 15% by weight of impact modifier and a (B)/(A) ratio of 3:20. Therefore, the PBT concentration level and the (B)/(A) ratio used in Example 7 are outside the scope of the polyester concentration level range and (B)/(A) ratio range set forth in amended claim 1.

The composition used in JP '947's Example 8 contains 100 parts by weight of PBT, 30 parts by weight of glass fibers, 5 parts by weight of an epoxy group-containing copolymer, and 15 parts by weight of a rubbery graft copolymer. Thus, the Example 8 composition contains 66.7% by weight of PBT, 13.3% by weight of impact modifier and a (B)/(A) ratio of 1:3. Therefore, the PBT concentration level used in Example 8 is outside the scope of the polyester concentration level range set forth in amended claim 1.

The composition used in JP '947's Example 9 contains 100 parts by weight of PBT, 30 parts by weight of glass fibers, 3 parts by weight of an epoxy group-containing copolymer, and 10 parts by weight of a rubbery graft copolymer. Thus, the Example 9 composition contains 69.9% by weight of PBT, 9.1% by weight of impact modifier and a

(B)/(A) ratio of 3:10. Therefore, the PBT concentration level used in Example 9 is outside the scope of the polyester concentration level range set forth in amended claim 1.

The composition used in JP '947's Example 10 contains 100 parts by weight of PBT, 30 parts by weight of glass fibers, 5 parts by weight of an epoxy group-containing copolymer, and 20 parts by weight of a rubbery graft copolymer. Thus, the Example 10 composition contains 64.5% by weight of PBT, 16.1% by weight of impact modifier and a (B)/(A) ratio of 1:4. Therefore, the PBT concentration level and the (B)/(A) ratio used in Example 10 are outside the scope of the polyester concentration level range and (B)/(A) ratio range set forth in amended claim 1.

The composition used in JP '947's Example 11 (see Table II on page 18) contains 100 parts by weight of PBT, 30 parts by weight of glass fibers, 10 parts by weight of an epoxy group-containing copolymer, 5 parts by weight of a rubbery graft copolymer and 1 part by weight of an epoxy compound. Thus, the Example 11 composition contains 68.5% by weight of PBT, 10.3% by weight of impact modifier and a (B)/(A) ratio of 2:1. Therefore, the PBT concentration level and the (B)/(A) ratio used in Example 11 are outside the scope of the polyester concentration level range and (B)/(A) ratio range set forth in amended claim 1.

The composition used in JP '947's Example 12 (see Table II on page 18) contains 100 parts by weight of PBT, 30 parts by weight of glass fibers, 10 parts by weight of an epoxy group-containing copolymer, 5 parts by weight of a rubbery graft copolymer and 2 parts by weight of an epoxy compound. Thus, the Example 12 composition contains 68% by weight of PBT, 10.2% by weight of impact modifier and a (B)/(A) ratio of 2:1.

Therefore, the PBT concentration level and the (B)/(A) ratio used in Example 12 are outside the scope of the polyester concentration level range and (B)/(A) ratio range set forth in amended claim 1.

The composition used in JP '947's Example 13 (see Table II on page 18) contains 100 parts by weight of PBT, 30 parts by weight of glass fibers, 10 parts by weight of an epoxy group-containing copolymer, 5 parts by weight of a rubbery graft copolymer, 1 part by weight of an epoxy compound and 1 part by weight of a carbodiimide compound. Thus, the Example 13 composition contains 68% by weight of PBT, 10.2% by weight of impact modifier and a (B)/(A) ratio of 2:1. Therefore, the PBT concentration level and the (B)/(A) ratio used in Example 13 are outside the scope of the polyester concentration level range and (B)/(A) ratio range set forth in amended claim 1.

The composition used in JP '947's Example 14 contains 100 parts by weight of PBT, 30 parts by weight of glass fibers, 10 parts by weight of an epoxy group-containing copolymer, 5 parts by weight of a rubbery graft copolymer, and 1 part by weight of a carbodiimide compound. Thus, the Example 14 composition contains 68.5% by weight of PBT, 10.3% by weight of impact modifier and a (B)/(A) ratio of 2:1. Therefore, the PBT concentration level and the (B)/(A) ratio used in Example 14 are outside the scope of the polyester concentration level range and (B)/(A) ratio range set forth in amended claim 1.

The composition used in JP '947's Example 15 contains 100 parts by weight of PBT, 30 parts by weight of glass fibers, 5 parts by weight of an epoxy group-containing copolymer, 20 parts by weight of a rubbery graft copolymer and 1 part by weight of an epoxy compound. Thus, the Example 15 composition contains 64.1% by weight of PBT,

16% by weight of impact modifier and a (B)/(A) ratio of 1:4. Therefore, the PBT concentration level and the (B)/(A) ratio used in Example 15 are outside the scope of the polyester concentration level range and (B)/(A) ratio range set forth in amended claim 1.

The composition used in JP '947's Example 16 contains 100 parts by weight of PBT, 30 parts by weight of glass fibers, 5 parts by weight of an epoxy group-containing copolymer, 20 parts by weight of a rubbery graft copolymer, 1 part by weight of an epoxy compound and 1 part by weight of a carbodiimide compound. Thus, the Example 16 composition contains 63.7% by weight of PBT, 15.9% by weight of impact modifier and a (B)/(A) ratio of 1:4. Therefore, the PBT concentration level and the (B)/(A) ratio used in Example 16 are outside the scope of the polyester concentration level range and (B)/(A) ratio range set forth in amended claim 1.

The composition used in JP '947's Example 17 contains 100 parts by weight of PBT, 30 parts by weight of glass fibers, 5 parts by weight of an epoxy group-containing copolymer, 20 parts by weight of a rubbery graft copolymer, and 1 part by weight of a carbodiimide compound. Thus, the Example 17 composition contains 64.1% by weight of PBT, 16% by weight of impact modifier and a (B)/(A) ratio of 1:4. Therefore, the PBT concentration level and the (B)/(A) ratio used in Example 17 are outside the scope of the polyester concentration level range and (B)/(A) ratio range set forth in amended claim 1.

Therefore, in view of the unexpected results shown in Applicants' Invention Examples and Comparative Examples relative to the (B)/(A) ratio's impact on Notched Charpy Impact Strength at -40°C and +23°C and on melt flow index and further in view of JP '947's failure to specifically teach the combination of polyester and impact modifier

concentration levels and (B)/(A) ratio range set forth in amended claim 1, Applicants respectfully submit that claims 1-3, 5, 7-9 and 12 would not have been obvious over JP '947.

II. Claim 9 and New Claim 15

Applicants respectfully submit that claim 9 and new claim 15 are patentable over JP '947.

According to the Office Action, it would have been obvious to use a combination of ethylene unsaturated epoxide copolymer and a core-shell polymer having as the core a polybutadiene, polybutadiene/styrene or methyl(meth)acrylate/alkyl(meth)acrylate copolymer.

In claim 15, the core materials are limited to one or more polymers selected from the group consisting of:

isoprene homopolymers,

copolymers of isoprene with at most 30 mol% of a vinyl monomer selected from the group consisting of styrene, alkylstyrene and alkyl (meth)acrylate,

copolymers of butadiene with at most 30 mol% of an alkyl (meth)acrylate, and

copolymers of alkyl (meth)acrylate with more than 0 mol% and at most 30 mol% of a vinyl monomer selected from the group consisting of styrene and alkylstyrene.

JP '947 does not teach or suggest the use of any of the core materials listed recited in claim 15. Therefore, for at least this reason, Applicants respectfully submit that claim

15 and claim 9, which depends upon claim 15, are not anticipated by and would not have been obvious over JP '947.

III. Rejection Under 35 U.S.C. §112

Claims 1-3, 5, 7-9 and 12 are rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. According to the Office Action, the claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

According to the Examiner:

Support for the Notched Charpy impact strength is not apparent. The Tables at page 15 support the limitation only for specific ratios and amounts of ethylene unsaturated epoxide copolymer (B-2) to core-shell copolymer (A) that are not clearly required in the claims.

The Office Action suggests that this rejection would be overcome if the claims were limited to clearly require 60 to 98% by weight of thermoplastic polyester and 2 to 40% by weight of impact modifier where the ratios of (B-2)/(A) are between 40/60 and 10/90 when the impact modifier is between 18 and 40% in 82 to 60% of polyester and the ratios of (B-2)/(A) are between 40/60 and 25/75 when the impact modifier is between 2 and 18% in 98 to 82% of polyester.

Claim 1 has been amended to recite from 82 to 98% by weight of the thermoplastic component and from 2 to 18% by weight of the impact modifier where the (B2)/(A) ratio is

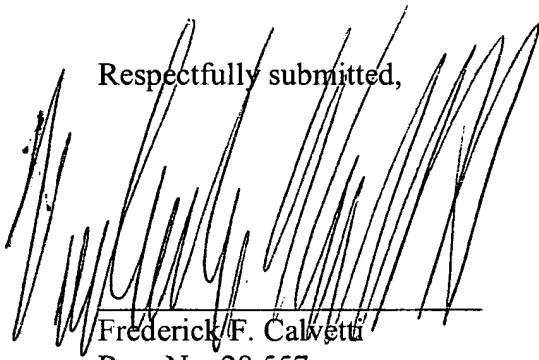
between 40/60 and 25/75. This recitation is found in paragraph (iv) and, therefore, does not constitute new matter.

In view of the amendment to claim 1, Applicants respectfully request that the § 112 rejection be withdrawn.

IV. Conclusion

In view of the foregoing amendments and remarks, Applicants respectfully request that the rejection of claims 1-3, 5, 7-9 and 12 be withdrawn and that these claims, along with new claim 15, be allowed.

Respectfully submitted,



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LISTING OF CLAIMS

Claim 1 (Currently Amended): Thermoplastic polyester compositions comprising, by weight:

(i) from 60 to 98% by weight of a thermoplastic component consisting of a thermoplastic polyester; and

(ii) from 2 to 40% by weight of an impact modifier consisting of:

(a) a core-shell copolymer (A); wherein the core consists of one or more polymers selected from the group consisting of isoprene homopolymers, butadiene homopolymers, copolymers of isoprene with at most 30 mol% of a vinyl monomer, and copolymers of butadiene with at most 30 mol% of a vinyl monomer, and copolymers of alkyl (meth)acrylate with more than 0 mol% and at most 30 mol% of a vinyl monomer, the vinyl monomer in the core being selected from the group consisting of a styrene, an alkylstyrene and an alkyl (meth)acrylate; further wherein the shell consists of one or more polymers selected from the group consisting of styrene homopolymers, alkylstyrene homopolymers, methyl methacrylate homopolymers, and copolymers consisting of at least 70 mol% of a styrene, alkyl styrene or methyl methacrylate with at most 30 mol% of a vinyl acetate; and

(b) an ethylene copolymer (B) chosen from ethylene-unsaturated epoxide copolymers (B2);

(iii) ~~the (B)/(A) ratio being between 40/60 and 10/90 for proportions of impact modifier between 18 and 40% in 82 to 60% of polyester, respectively;~~

(iv) ~~the (B)/(A) (B2)/(A) ratio being between 40/60 and 25/75 for proportions of impact modifier between 2 and 18% in 98 to 82% of polyester, respectively~~[[;]]

~~wherein said impact modifier consisting of (A) and (B) provides the compositions with a higher Notched Charpy impact strength at -40°C and at +23°C than does an impact modifier consisting of (A) or (B) individually.~~

Claim 2 (Previously Presented): Compositions according to Claim 1, wherein the polyester is selected from PET and PBT.

Claim 3 (Previously Presented): Compositions according to Claim 1, comprising up to 30 parts by weight of copolyetherester per 100 parts of thermoplastic polyester.

Claim 4 (Previously Presented; Withdrawn): Compositions according to Claim 1, comprising up to 30 parts by weight of polycarbonate per 100 parts of thermoplastic polyester.

Claim 5 (Previously Presented): Compositions according to Claim 1, wherein the copolymer (A) comprises an elastomer core and at least one thermoplastic shell.

Claim 6 (Previously Presented; Withdrawn): Compositions according to Claim 1, wherein the copolymers (B1) are ethylene-alkyl (meth)acrylate-maleic anhydride copolymers which comprise from 0.2 to 10% by weight of maleic anhydride and from 0 to 40% by weight of alkyl (meth)acrylate.

Claim 7 (Previously Presented): Compositions according to Claim 1, wherein the ethylene-unsaturated epoxide copolymers (B2) are ethylene-alkyl (meth)acrylate-unsaturated epoxide copolymers obtained by copolymerization of the monomers and contain from 0 to 40% by weight of alkyl (meth)acrylate and up to 10% by weight of unsaturated epoxide.

Claim 8 (Previously Presented): Compositions according to Claim 1, comprising, per 100 parts by weight, 75 to 95 parts of polyester for 25 to 5 parts of impact modifier, respectively.

Claim 9 (Currently Amended): Compositions according to Claim ~~4~~ 15, wherein the proportions of (A) and ~~(B)~~ (B2) are that the ~~(B)/(A)~~ (B2)/(A) is between 40/60 and 25/75, whatever the amount of impact modifier in the polyester.

Claim 10 (Previously Presented; Withdrawn): Impact-modifier compositions comprising:

(a) a core-shell copolymer (A);

(b) an ethylene copolymer (B) selected from ethylene-unsaturated carboxylic acid anhydride copolymers (B1), ethylene-unsaturated epoxide copolymers (B2) and blends thereof;

the (B)/(A) ratio being between 40/60 and 10/90 for proportions of impact modifier between 18 and 40% in 82 to 60% of polyester, respectively,

the (B)/(A) ratio being between 40/60 and 25/75 for proportions of impact modifier between 2 and 18% in 98 to 82% of polyester, respectively, and advantageously between 5 and 18% in 95 to 82% of polyester, respectively.

Claim 11 (Previously Presented; Withdrawn): Compositions according to Claim 6, wherein the amount of alkyl (meth)acrylate is 5 to 40% by weight.

Claim 12 (Previously Presented): Compositions according to claim 1, wherein the compositions consist of the thermoplastic polyester and the impact modifier.

Claim 13 (Cancelled)

Claim 14 (Previously Presented; Withdrawn): A thermoplastic polyester composition comprising, by weight:

- (i) a thermoplastic polyester; and
- (ii) an impact modifier comprising:
 - (a) a core-shell copolymer (A); wherein the core consists of one or more polymers selected from the group consisting of isoprene homopolymers, butadiene homopolymers, copolymers of isoprene with at most 30 mol% of a vinyl monomer, and copolymers of butadiene with at most 30 mol% of a vinyl monomer, the vinyl monomer in the core being a styrene or an alkylstyrene; further wherein the shell consists of one or more polymers selected from the group consisting of styrene homopolymers, alkylstyrene homopolymers and copolymers consisting of at least 70 mol% of a styrene or an alkyl styrene with at most 30 mol% of a vinyl acetate; and
 - (b) an ethylene copolymer (B) chosen from ethylene-unsaturated carboxylic acid anhydride copolymers (B1); wherein the (B1)/(A) ratio is between 40/60 and 10/90 for proportions of the impact modifier between 18 and 40% by weight of the thermoplastic polyester composition, further wherein the (B1)/(A) ratio is between 40/60 and 25/75 for proportions of the impact modifier between 2 and 18% by weight of the thermoplastic polyester composition.

Claim 15 (New): Thermoplastic polyester compositions comprising, by weight:

- (i) from 60 to 98% by weight of a thermoplastic component consisting of a thermoplastic polyester; and
- (ii) from 2 to 40% by weight of an impact modifier consisting of:
 - (a) a core-shell copolymer (A); wherein the core consists of one or more polymers selected from the group consisting of isoprene homopolymers, copolymers of isoprene with at most 30 mol% of a vinyl monomer selected from the group consisting of styrene, alkylstyrene and

alkyl (meth)acrylate, copolymers of butadiene with at most 30 mol% of an alkyl (meth)acrylate, and copolymers of alkyl (meth)acrylate with more than 0 mol% and at most 30 mol% of a vinyl monomer selected from the group consisting of styrene and alkylstyrene; further wherein the shell consists of one or more polymers selected from the group consisting of styrene homopolymers, alkylstyrene homopolymers, methyl methacrylate homopolymers, and copolymers consisting of at least 70 mol% of a styrene, alkyl styrene or methyl methacrylate with at most 30 mol% of a vinyl acetate; and

(b) an ethylene copolymer (B) chosen from ethylene-unsaturated epoxide copolymers (B2);

(iii) the (B2)/(A) ratio being between 40/60 and 10/90 for proportions of impact modifier between 18 and 40% in 82 to 60% of polyester, respectively;

(iv) the (B2)/(A) ratio being between 40/60 and 25/75 for proportions of impact modifier between 2 and 18% in 98 to 82% of polyester, respectively.